

133⁺ Pass, to the south of Chamba. Between Chamba and Chúiari, the gneiss was overlaid by chlorite and mica slates. On the south of the range, the same fine roofing-slates (both mica and clay) are found to the north of Kangra, and to the north of Mandi. Both on the north and south of the range, the beds of some of the small streams are washed for iron-sand, which, after washing, yields as much as 90 per cent. of pure metal. The same iron ore is worked at Kumán, near Mandi, where it occurs in thin black, sparkling ribands, in a soft grey sandstone. The sandstone is pounded with a hard round boulder, and after washing yields about the same quantity of metal as the other.

133⁺ The second portion of the Sub-Himálayan range extends from the Rávi to the Chenáb, a distance of fifty-five miles, and forms the natural boundary between Chamba and Bhadrwár, on the north, and the small districts of Chaneni, Bandrála, and Baláwar, on the south. Between Bhadrwár and Chamba, the passes of Bhadr Dhár and Chatr Dhár are upwards of 10,000 feet in height, and the ridge may therefore have an elevation of 12,000 feet, or even more. To the south of Chaneni it breaks into a remarkable triple-peaked mountain, which is held sacred by the Hindus, under the name of Tré-kuta Devi (the three-peaked or trident goddess).

The central portion of the Sub-Himálaya is the well-known Ratan Panjál, which is crossed by the Bhimbar road to Kashmir. The pass of Ratan Pir, from which the mountain (*Panjál*) derives its name, has an elevation of 7,700 feet, and the highest peaks rise to about 11,000 feet. It is clothed to the very summit with magnificent trees, and its glens are not surpassed in

133^x insignificant, that the Suraj Dal may fairly be considered, as it is reputed to be, the source of the Bhágá river. But the Chandra Dal, although double the size of the Suraj Dal, is situated at least twenty-five miles below the real source of the Chandra river, in the Bara Lacha Pass. It is, however, always spoken of as the source of the Chandra river. Dal is a Kashmiri term for any sheet of water, whether large or small: but it is also a Tibetan word, signifying "still, quiet."*

103
133^y Many hot springs exist in different parts of Ladák; but the best known are those of Nubra, Puga, and Chushul. The first two were visited by Moorcroft, who found the waters "quite clear, and of the same temperature of 167°, at mouths distant two hundred yards from each other." Below the springs were beds of soda.

133^x The hot springs of Puga,† I have myself examined.
● 135 The springs occur in the bed of a rivulet called the Rulang-chu, for a length of about two miles. The springs vary in strength, from gentle bubbling to strong ebullition, and in temperature from 80° to 148°, the hottest containing chloride of soda and sulphuretted hydrogen in solution, and those of low temperature containing chloride and borate of soda, both in solution. Sulphur occurs on the northern bank of the rivulet in pure transparent crystals, and in thin laminæ disseminated throughout the gypsum rock. The volcanic neighbourhood of Puga is something like that of the Tuscan lagoons near Monte Cerbole, which now supply Europe with the same minerals: "These lagoons consist of springs in a furious state of ebullition, whose vapours

* *Dal*, "quiet;" compare the English "dull."

† *Bu-ga*, a hole.

LAKES AND SPRINGS.

145

contain boracic acid, and the ground is covered with crystallizations of sulphur and other minerals."* The volcanic agency is still active in Tuscany; in Ladák, though not extinct, it is evidently dying.

The hot spring of Chushul was visited by Moorcroft and Trebeck. It is without taste or smell, but is said to have medicinal properties. Its temperature is 96°.

* M'Culloch's Commercial Dictionary—Art. Borax.

THE SOUTHERN ROAD.

153

TWO ROUTES FROM PHADAM IN ZANSKAR TO LÉ. 491

WINTER ROUTE.

- 1 Muni.
- 2 Yang Jhul.
- 3 Maleng.
- 4 Kina Jhula.
- 5 Zongnar.
- 6 Chumik Marpo.
- 7 Tokpo Soma.
- 8 Charáp.
- 9 Dong chéchan.
- 10 Pachálong.
- 11 Kyang-cho.
- 12 Rukchin.
- 13 Debraung.
- 14 Gya.
- 15 Miru.
- 16 Ughsi.
- 17 Hemis.
- 18 Thagna Goupa.
- 19 Chachot.
- 20 Lé.

DIRECT ROUTE.

- 1 Tondé.
- 2 Jand-lá.
- 3 Sumdo.
- 4 Dagmoche.
- 5 Karna Sumdo.
- 6 Rabrang.
- 7 Marka.
- 8 Kyo (Skyo or Skio).
- 9 Shingo (Pass).
- 10 Rumbak.
- 11 Pitak.
- 12 Lé.

IV.—3rd. THE SOUTHERN ROAD.

By this route the shawl wool is brought to the large cities of Nurpur, Amritsar, and Ludiana, all of which make a return in manufactured shawls and coarse brocades. The roads from all these places meet at Mandi (the market) or Maudinagur (market-city) on the Byas river, the capital of the small state of that name. From Nurpur the merchants proceed via Kangra and Baijnath; from Amritsar, via Hushiyarpoor and Nadon; and from Ludiana, via Ropar and Bilaspur; the distances of the first and last being about 120 miles; of the second, about 150 miles. 491 439

From Mandi this road proceeds by the iron-mines of Kumán to Sultánpur, the capital of Kullu. From [135] 491

III.—MINERAL PRODUCTIONS.

The mineral productions of Ladák are more interesting to the geologist than important to the economist. The most striking geological features, and the principal localities of some of the prevailing rocks, have already been noticed in my description of the mountains: but the more useful minerals still remain to be mentioned.

Slate.—"The use of slates,"* says McCulloch, "is entirely European. From the Hellespont to China there is not a single slated house." This statement is correct, as far as my observation goes in the plains of India, where slates cannot be procured, but in the hills the use of slates is very common. The best slates that I have seen are those of the clay-slate formation, in the *Dhaola-Dhar* range, between Kangra and Chamba. There are quarries on both sides of the range. The roof of the great temple at *Mahila*, on the Rávi, is roofed with large slates, which are nailed to the planking in the usual manner. On the south sides of the range, the use of slates is universal. All the houses in the large towns of Kangra, Tira, and Jwála-Mukhi, are roofed with slates of a very fine description. All the temples, and many of the houses in the districts around Simla, are also roofed with slates, but of an inferior kind. In Mandi and Kullu, however, the mica-slate formation yields very large thin slates of an excellent description. In Láhul and Ladák the clay and mica schists could be split into slates of a smaller size; but the extreme scarcity of timber prevents the construction of large rooms, and for small ones the people find that flat roofs are the simplest and the most commodious.

* M'Culloch's Commercial Dictionary, art. SLATE.

● 135 *Lime*.—The most prevalent rock in Ladák is limestone. In Spiti, the whole formation is of this rock, excepting near Losar, where it changes into clay slate. It forms the range that divides Rukchu from Zanskar, and again changes into clay slate near the junction of the Sum-gyel rivers.

It pervades Zanskar, and is found on both banks of the Indus; in the Photo Lá and Háu passes. It occurs at both ends of the Pangkong lake, and extends from Sassar to the crest of the Kárakoram range. Notwithstanding this general prevalence of the rock, the scarcity of wood is so great that none but the wealthy can afford to use lime mortar in their houses.

333 *Marble*.—For ornamental purposes none of the Ladáki limestones that I have seen would be considered of any value;* but the fossiliferous limestone of Kashmir takes a very high polish, and the splendid pillars of the Shálimar are the only beautiful things now remaining in that once celebrated garden.

Gypsum.—This useful mineral is found at the sulphur-mines, on the banks of the Puga rivulet, either in pure white flakes regularly disposed, or in a compact rock, with crystals of sulphur attached to it, and thin veins of nearly pure sulphur disseminated through it. It occurs also on the right bank of the Spiti river, below Losar, at the celebrated cave of Amaranáth, in Kashmir, and on the banks of the Shigar river, in Balti.† No use whatever is made of it by the people.

Clay.—Extensive deposits of the finest clays of all

* Mir Izzet Ullah, however, mentions a striped marble-like Sulimáni stone as occurring in the bed of the Shayok river, between Chong-Ulang and Dong-Bailák.—Quart. Orient. Magazine, 1825, p. 113.

† See Vigne's map for Gypsum.

MINERAL PRODUCTIONS.

231

- /35 colours are found throughout Ladák. They are all lacustrine formations, and are seen adhering to the sides of ravines, and attached to steep cliffs that have once been washed by the great rivers. In the gap between the monastery of Pitak and the end of the granite range, to the west of Lé, there is an immense mass of indurated clay, disposed in horizontal layers of different shades, but chiefly of a pale yellow and light lavender colour. Beyond Pitak the same clay strata occur again in a recess of the hills on the right bank of the Indus. But the most remarkable deposits of clay are immediately below Lama-Yúrrú, where a pale straw-coloured clay is seen in all places in the bed of the stream, in small patches on the summits of detached rocks, and in large masses overlying the slate to a height of at least one thousand feet above the present bed of the stream.* A similar coloured clay occurs in a ravine of the Yunam river, just above the Yunam lake. At different places in the Nubra valley, Dr. Thomson observed similar deposits of bluish-coloured clay; and near Skardo he found one containing fossil remains of *Planorbis* and *Succinea*. Near Rámu-Serai, in Kashmir, I found beds of highly indurated clay, mixed with boulders, which rose to a height of 150 feet above the plain. This lacustrine formation would alone prove the existence of a vast lake, that once covered the whole valley of Kashmir to a depth of about 200 feet.

Steatite was found by Vigne on the banks of the Drás

/73

* The Lamas of this place have a tradition that a lake formerly existed on the spot, that the rock was cut through by Naropa, a Lama from Brigúng, near Lhasa, and that the present monastery of Yung'Dung Goupa was built by him. Lámá Yúrrú is the Kashmirian name of the place. All clays are called *rDes-ma*.

● 135 river, near the Taskyum bridge,* and on the left branch of the Shigar river, in Balti.

155 Gold is found by washing the sands of the Indus and
316 of the Shayok river; but the washings are entirely
173 carried on by Mussulmans from Balti, as the Buddhists of Ladák have long been prohibited from the search. The prohibition is said to have originated in the fears of the Gyalpo lest the people should neglect their fields in the tempting pursuit of gold. The crowds that have flocked to the recent "diggings" in California and Australia have fully justified the fears of the Gyalpo.

[776] Gold is also found in Chang-thang, but its collection is
[784] prevented by a superstitious belief that the lumps of native gold "belong to the genii of the spot, who would severely punish the human appropriation of their treasures."† The sands of the Indus have long been celebrated for the production of gold. Pliny‡ says, "*Fertilissimi sunt auri Dardæ*;" and this is the case even at the present day; for the sands of the Indus, in the Dardu country, are said to be more prolific than those of any other part of the river. But the gold of [136] the Indus was known at a still earlier date; for Megasthenes relates that the Indian ants dug gold out of the earth, not for the sake of metal, but in making burrows for themselves.§ These Indian ants are no doubt the

* Travels, II. p. 392, and map.

† Moorcroft, I. p. 314.

‡ Lib. VI. c. 19. The conclusion of the passage is curious and suggestive, *Setæ vere argenti*, that is, "the country of the Dardæ produced most gold, but that of the *Setæ* the most silver." As we know that silver is not found in India, the *Setæ* can be no other than the *Seths*, or "bankers," in whose hands the wealth of India has been for ages. It seems probable that many of the Indian nations, enumerated by ancient authors, may have been only different trades and professions.

§ Arrian, Indica, XV.

marmots (*Arctomys*) and rat-hares (*Lagonys*) of Tibet, 135
 which in making burrows "throw up the earth wherein 173
 the ore is contained, from which the Indians extract 136
 gold." On the plains along the banks of the Indus and
 Shayok, the marmots still throw up the earth mixed
 with gold-dust, from which the Indians of Balti occa-
 sionally extract a few grains of gold. Megasthenes
 confesses that he had not seen the animals themselves,
 but only their skins, which had been brought by the
 Macedonian soldiers into Alexander's camp. The skin
 of the marmot is the commonest of all the furs now
 brought to India.* Its Tibetan name is *Phyi-pa* or
Chipa (or *Chupa*), which was probably confounded by
 Alexander's soldiers with the Indian *Chúntá*, the name
 of the large ant; or *Phyi-pa* may have been confounded
 by the Indians themselves with *Pippilaka*, the Sanscrit
 and Bengali name of the large ant.†

The same story of the ants as big as foxes is told by
 Herodotus; and Professor H. H. Wilson‡ has aptly
 illustrated it by a passage from the *Mahábhárata*, which
 relates that "the people who dwell under the pleasant
 shade of the *Kichaka-venus* (a kind of willow) and along
 the *Sailodá* river, between the *Méru* and *Mandara*
 mountains, the *Khasas*, *Prádaras*, *Páradas*, *Ekásanas*,
Arkas, *Kulindas*, *Tanganas*, and *Paratanganas*, brought
 to *Yudhishtira* lumps of gold, a *drona* (64 lb.) in
 weight, of the sort called *paippilika*, "or ant gold,"
 which was so called because it was exfoliated by the

* The same holds good to the eastward, for Mr. Hodgson says, "In
 the extensive peltry trade carried on between *Nepál* and *Tibet*, no skin
 is more commonly met with than that of the marmot."—*Journal As. Soc.*
Bengal, X. p. 777.

† *Phyi-pa*, commonly pronounced *Chi-pa*.

‡ *Journal Roy. As. Soc.* VII. p. 143.

- /35 *pipplaka*, or common large ant." This belief, however
 /36 erroneous, as the learned professor observes, was neither
 /73 extravagant nor irrational. A yet earlier mention of the
 gold of Alpine India is that of Ctesias; but he distinctly
 states that it was not obtained by washing, as in the river
 Pactolus.* Gold is called *Ser*, gold-dust *Ser-dul*, and
 the gold-washer *Ser-pa*. This name I believe to have
 [103] been the origin of the classical *Seres*. In Tibetan
Serki-yul means the "gold country;" and as the affix
yul can be omitted at pleasure, the names of *Serki* and
Serika are almost identical.†

/35 *Copper*.—According to Moorcroft, "some copper-
 mines are said to have been discovered towards Kash-
 mir."‡ This statement is probably correct, as Jacque-
 mont found copper ore in the Lidar valley, on the south-
 west side of the range which divides Kashmir from the
 Ladáki district of Suru. If any trust can be put in a
 name, I should suppose that copper (*zangs*) had been
 found in *Zangskar*, but I could not learn that it had been
 discovered there.

Lead and *Iron* are, according to Moorcroft, found in
 pits in the mountain districts remote from Lé.

Plumbago is found in Balti; but the specimens which
 I procured are of an inferior description. They are
 gritty, and will not mark paper without scratching; but
 as they were most probably taken from the long-exposed
 surface, good black lead may still perhaps be found in
 the same place.

Sulphur, called *Muzi*, is obtained only at Puga, in

* Fragments of Ctesias by Lion. Indica, XII. "Ἐστὶ δὲ καὶ χρυσὸς
 ἐν τῇ Ἰνδῷ χώρῃ, οὐκ ἐν τοῖς ποταμοῖς εὐρισκόμενος καὶ πλυνόμενος, ὥσπερ
 ἐν τῇ Πακτωλῷ ποταμῷ.

† *gSer*, gold; *gSer-rDul*, gold dust.

‡ Travels, l. p. 313.

MINERAL PRODUCTIONS.

235

Ladák; but the sulphur of Chang-thang is so easily 135 ● obtainable, that the Puga mine is almost neglected. The bed of the small rivulet Rulang-chu, which traverses the glen of Puga, is full of hot springs, varying in temperature from 80° to 148°. The hottest springs are strongly impregnated with sulphuretted hydrogen. The sulphur itself is found on the left bank of the rivulet, where a small hole has gradually been excavated by the shepherds. It occurs in pure transparent crystals attached to the gypsum, or in thin opaque laminæ disseminated through the rock. The quantity exported is [439] very small, but I was informed by the shepherds that as much as 100 small maunds (of 16 seers each) are sometimes mined. In 1847 I saw twelve sheep-loads (or twelve maunds) of sulphur that had been taken from this mine; but I feel satisfied that the average quantity of sulphur annually mined cannot be more than fifty maunds, and is probably much less. No duty is taken at the mine; [657] and the export duty, which is only a quarter of a rupee per maund, can often be evaded.

Borax, in Tibetan *Tshalé*, is thrown up in the form of boracic acid by the hot springs of lowest temperature in the valley of Puga. The banks of the rivulet, for about two miles in length, are quite white with the saline matters that are continually being precipitated. These salts are chloride of soda and borate of soda. They are carefully scraped from the surface, as the under-coating is only the refuse of former years. Those of a faint pinkish hue, inclining occasionally to green, are preferred; but these colours entirely disappear as the salts become dry. This impure mixture is the tincal of commerce, from which the borax (borate of

- 135 soda) is obtained in India in the shape of crystals, by solution and evaporation.

Soda.—The banks of the Thogji Chanmo lake, in Rukchu, are incrustcd with masses of saline matter ; and in passing round its southern end, the crisp, hardened surface of salt yields and crackles beneath the feet of the traveller. The lake is commonly called *Tsho-kar*, or the White Lake, by the Botis, and *Khaori Talao*, or Salt Lake, by the Hindus of Bisahar, Chamba, and Kullu. The salt is natron, or sub-carbonate of soda. No use is made of it.

Magnesia.—The salts deposited on the banks of the great Tshomoriri lake are common salt and muriate (hydrochlorate) of magnesia. These salts do not occur in any great heaps, like those on the Tsho-kar ; but as the Tshomoriri lake is sixteen miles in length, a considerable quantity might no doubt be obtained annually along its forty miles of shore.

Salt, in Tibetan *Tshá*, is found on the banks of the Tshomoriri lake, in combination with the magnesia. I was informed that no use whatever was made of it, as rock salt (from Lahor) was procurable without difficulty.

Garnets of an inferior description, and of a dark brown colour, were found at Puga by Dr. Thomson in a coarse grit stone rock. The natives were not aware of their existence.

Momiaí, a mineral substance of a dirty brownish-black colour, is found in Balti. It has a strong unpleasant smell, and it burns with a thick black smoke, leaving a considerable quantity of dark-coloured ashes. It is probably petroleum, the quantity of ash perhaps

MINERAL PRODUCTIONS.

237

arising from the admixture of some foreign substance, 135 ●
employed either to collect or to solidify the native liquid.
The common *momiai* of Indian medicine is of course a
manufactured article; although not made, as generally
asserted, of the melted fat of Abyssinian boys, who have
been roasted for the purpose. The *momiai* of Balti is
said to be a natural product. The original *momiai* was
only mummy,* which, at one time, was held in much
repute, even in Europe.

* The name of *Momiai* موميائي is derived from *Momia* موميا, or
Mummy.

sulphur, and dried fruits, of which only the first is of any consequence, and even that is not of sufficient importance to deserve more than a slight notice. 437

Wool, in Tibetan *Bal*, is the chief product of Ladák. It is of two kinds: goat-wool, or *Le-na*, which is used for shawls, and sheep-wool, or *Bal*, which is used for blanketing and coarse clothing, and for stuffing pillows and bedding.

The quantity of home-produced shawl-wool annually exported from Ladák averages 2,400 small maunds, or 76,800 lb. The value in Ladák is the same amount in rupees (Rs. 76,800), at the rate of two rupees per seer. The shawl-wool is exported to Kashmir, Nurpur, Amritsar, and Rampur.

The commoner sheep-wool is produced in much greater quantities, and the general amount of export (5,000 maunds) more than doubles that of the finer wool. The value at eight seers per rupee is only 2,000 rupees.

Borax.—The borax and sulphur-mines are found together at an uninhabited spot named Puga, on the Rulang-chu, a small stream which is full of hot springs, and which joins the Indus on its left bank, miles above Lé. Puga stands in N. latitude 33° 12', and E. longitude 78° 16', at an elevation of 15,264 feet above the sea. The borax is ejected in the bed of the stream by the numerous hot springs at various temperatures, from 80° upwards. The salt (borate of soda) is found along both banks of the rivulet for about two miles, in conjunction with chloride of soda. It is in a damp state, owing to the vapours emitted by the hot springs. In collecting the borax, the surface of the salt, which is generally of a light pink creamy hue (sometimes in-

● 135
316
439
2
clining to green), is carefully scraped and collected in bags. When dry, it is of a dull white colour. In this state it is collected by the shepherds, who pasture their flocks on the rich summer grass of the plains of Rukchu. The quantity of this borax annually exported is stated at 500 maunds, or 16,000 lb.; the value, at the rate of sixteen seers per rupee, being only Rs. 500.

Sulphur.—The Puga sulphur-mine is situated at a short distance from the stream, at the foot of a gypsum cliff. The mineral occurs chiefly in the form of thin laminæ disseminated throughout the rock; but in all the fissures there are numerous detached crystals, quite transparent and of all sizes, from that of a grain of sand to one-eighth of an inch. In detaching the sulphur, the crystals are mostly reduced to powder and partially mixed with the gypsum rock; and in this state it is carried to the markets of Nurpur, Kangra, and Rampur. The vague statements of the shepherds make the annual supply about 500 maunds, or 3,200 lb., but I should think that it rarely amounted even to one-half of that quantity.

439
243
Dried Fruits.—These consist of apricots and small seedless raisins (commonly called currants). I have no means of making even a guess at the amount of this export, but the quantity must be considerable. I never found a single trader or shepherd without numerous bags of them; and I have procured them in all the bazaars in the hill states from Kashmir to Kangra and Simla. In the Simla bazaar they are sold at from two to two and a half seers per rupee.

The whole value of the foreign trade of Ladák, in home produce, does not exceed Rs. 80,000 or £8,000.

SIN--rdikpa. The inexpiable sins are the murder of a father, a mother, or an "arhat" or one who is about to attain "nirvána." Other chief sins are murder, lying, theft, fornication, and drunkenness.

688

SIR--In Tibetan there is no word for "Sir;" it is not required, as the language of "respect" is almost a language in [147] itself. The word "joo" or "jooley" added to a sentence is a term of respect, thus a servant saying "yes, Sir" would say "kasa joo." The word "Sahib" is pretty will [sic] understood near Leh.

195
576

SLATE--hiámangs. This word means "slate," but as "slate" is the only kind of slab stone known to Ladákis, all slab stones are termed "slate." Samthra (or samtha) is the name of the wooden boards used like school-slates. Dust is scattered on them, and on this the children write.

135
872

SLAVERY--GHóyálches. In former days there used to be three classes of slaves in Ladák. One class consisted of Tartars from the high Chángtháng plain, which stretches from the eastern frontier of Ladák to the vicinity of the Mánásarwar Lake, who had in their childhood been sold by their parents to people of Ladák. Those were termed "GHóyál" and were slaves in the ordinary sense of the word. About 1873, Mr. Johnson, who was then Wazeer of Ladák, ordered all these slaves to be set at liberty, and he prohibited the further traffic in Tartar children. Of the slaves then set free, a few elected to remain in Ladák, but the large majority returned to their own country. Another class of slaves consisted of the illegitimate children of Dógra or Kashmiri sepoy, etc., by women of Ladák. These were termed "GHulámzádah" and were State slaves; they were supported by the Kashmir State, and had to work without receiving any pay. They were not permitted to leave the country. About 1868, an attempt was made to convert them into agriculturists, but owing to their want of skill and capital, the attempt failed. In 1871, Mr. Drew, who was then Wazeer, obtained the Maharaja's permission to set them free. They have long since been absorbed into the general population of the country. The third class consisted of State debtors, or their descendants. These debtors were fraudulent debtors having made away with, or

567

[848]

687
567
426

431
[245]
[234]
[236]
[135]•
437
439
461
241
462
The plowing of the fields was done by the master of the house, as was the custom with all farmers; the watering and weeding was done

431
[245]
[234]
[236]
[135]•
437
439
461
241
462
The plowing of the fields was done by the master of the house, as was the custom with all farmers; the watering and weeding was done

431
[245]
[234]
[236]
[135]•
437
439
461
241
462
The plowing of the fields was done by the master of the house, as was the custom with all farmers; the watering and weeding was done

431
[245]
[234]
[236]
[135]•
437
439
461
241
462
The plowing of the fields was done by the master of the house, as was the custom with all farmers; the watering and weeding was done

431
[245]
[234]
[236]
[135]•
437
439
461
241
462
The plowing of the fields was done by the master of the house, as was the custom with all farmers; the watering and weeding was done

136

B. Francke—A collection of Ladakhi Proverbs.

[No. 2,

539

805

- (c) On a spring day [there are] three colds and three warmths
In a lifetime [there are] three happy [hours] and three
unfortunate [hours].

- (d) Misery and happiness are well balanced in man's life.

000

- (e) *Spid nyin* is a *Compositum determinativum* formed from
spidka and *nyima*. Also *drangsum*, *drosun*, etc., must
be considered as *Composita*, which accounts for the
missing articles; the termination *la* to be pronounced a.

539 2.

- (a) སྒྱིད་དུག་མི་ལ། མཛོད་པ་ཤིང་ལ།

- (b) *skyid'dug mi'la*, *dzer'pa shing'la*.

- (c) Fortune [comes] to man, [as] a knot to the tree.

- (d) No man knows the cause of a knot in a tree, just so
unexpectedly misery and fortune come to certain
people.

000

- (e) *Skyiddug* is *Comp. copulativum*.

539 3.

- (a) ཐིག་པ་སྒ་ལྷ་གྲ་མཚོ་གང།

- (b) *thigs'pa sag'na gya'thso gang'*.

- (c) If drops gather, [there is] a full ocean.

000

- (d) *Gang*, though of verbal derivation, is often used without
an article to express the adjective "full."

539 4.

- (a) མཱ་ཤྲོའི་ནག་རང་དང་ལུག་ཀྲོག་མཚ།

སྒེལ་མཛོད་མཛོ་ཆེ་དང་གཡག་མཛོ་མཚ།

- (b) *Ma'shroi nag'rang dang lug'khog zam'*
slal dos'moche dang yag'khog zam'.

527

132

805

- (c) With [at the time of] the *nagrang* festival at Mashro
[the heat] is as great as the body of a sheep.

With the *dosmoche* festival at Leh it is like the body of
a Yak.

- (d) From the peasant's calendar. Because the festival at
Leh is celebrated several weeks after that in Mashro,
it is warmer then.

000

- (e) *Maspro*=great joy. Though in this proverb the
original pronunciation of *Leh=slal* is retained, in
ordinary speech *s* and *l* are dropped; final *l* shows a
great inclination to disappear. Sheh, a village on the
Indus, was originally spelt *shel*—crystal, because crystals
are found in the surrounding hills. *Gyapo* is said
instead of *gyalpo*, etc. *Slal* is supposed to have been

and ultimately a precipitation, of the saline materials they contained and were being supplied with, were going on. For this tract is the one of all where there is the greatest deposit of salts. At other parts, indeed, there had been seen a thin cake, or else an efflorescence, of salts, sometimes of carbonate of soda and sometimes of sulphate of magnesia. But here, over many square miles, is a thick bed of salt which I believe to be chiefly sulphate of magnesia. There are three or four forms in which this occurs; first mixed with sand to a depth of many inches, but with a thin cake of unmixed saline matter at the surface; as one passes over this, the foot, crackling through the cake at top, sinks deep in the soft saline sand; secondly, a powdery form of the white salts, this being probably a changed state of the material to be mentioned next; lastly, a hard crystalline colourless cake of the salt; to what depth this may reach I do not know, but as much as 10 feet of thickness have I seen. The surface of this cake is often irregular, in hard rough narrow ridges, two or three feet high, of the consolidated salt, with the soft powdery salt, or the mixture of earth and salt, between them*; these may have been forced up by the frost at the margin of the lake, in the same way as the frost-margins are made which we saw by Pāngkong Lake; for I observed such a line of ridge along the edge of one of the present pools of water.

The water of the small lake now remaining, though very saline, yet was frozen when I saw it on the morning of the 6th September; for the cold had even then begun to be intense. Where the flat widens out, and connects eastward with the rest of the Plains, its surface bears much less of the salts.

GENERAL OBSERVATIONS.

We have now considered these uplands in their separate divisions of the two plains and the dividing mountains. There are yet some observations to be made which will refer more generally to the whole tract.

First we will recapitulate the facts which have been more or

* It will be understood that I am not speaking of common salt, but of the same compound as before.

[i.e. of the Plains of LADAKH. -- ANALYST]

133^x
 135

361 position. Then I heard that many years ago when the country
778 was invaded by the Muslims, the whole of this carved cliff face was encased by the Tibetans behind buildings which were hastily made to hide the sacred Buddha, since the Mohammedans looked upon such carvings as idols and would have defaced it. Now the Buddha stands in a perfect state of preservation wearing bracelets, a double necklace, earrings and a headpiece, and with four arms, two of which are held up, the others hanging by his side have a serpent entwined around them. It is really a fine piece of work with details such as even the stomach muscles carved.

There was then no doubt as to our having entered the land in which all were his followers; every village has its monastery; bits of rags fluttered from poles on the roofs of houses—prayer flags; chortens and manis are to be found everywhere, just as are the prayer wheels, some set upright so that those who pass can revolve them by hand, others placed near to a stream for the water to turn them, and on each revolution a prayer is automatically sent to heaven. The people carry these prayer wheels on a stick in their hands; usually they are made of copper, the wealthier among them have them studded with coral, turquoise and decorated, but they all contain prayers which have been written down from one of the holy books. If the prayer is written one hundred times, then with one turn of the wheel a hundred prayers are sent up to heaven.

135 The day following we had another pass to cross over. This,
439 the Namikha La, is close on thirteen thousand feet high, but was far easier going than the first. What amazed us was that the white which we had imagined to be snow on its summit, we found to be salt. Salt is one of Ladakh's principal exports; this is transported in small sacks strapped like saddle-bags on the backs of goats, herds of them being used for this purpose and occasionally met with on the road.

361 Going down to the string of villages we saw the old castle on the top of the hill; now a ruin, it was once the scene of bitter fighting in the sixteen hundreds. The village is at the foot of the hill, but the extraordinary thing is that on the steep hill sides, which would seem impossible to climb, there are many dwellings which appear to be stuck on; the rooms run into the hill

241

[231]

[262]

range, the crops often fail for lack of sun-warmth. Ploughing is chiefly done by the hybrid of the yak bull and the common cow, known as *so* (male) or *somo* (female). This animal is also used for transport purposes. Grazing is limited, and consequently the number of live-stock is not large, but there are a fair number of ponies, those from Zaskār being famous. The food of the Ladākhis is the meal of *grim*, made into a broth and drunk warm, or else into a dough and eaten with butter-milk. The Ladākhis have no prejudices, and will eat anything they can get.

135 Minerals.

Borax is produced in Rupshu, and salt is found. About 1,436 maunds of borax are annually extracted, but the industry is profitable neither to the people nor to the State. In former days sulphur, saltpetre, and iron were manufactured in factories at Leh, but the scarcity of fuel has now rendered these industries impossible.

286 Manufactures.

Practically the only manufacture is that of woollen cloth, known as *pattū* and *pashmīna*.

439 Commerce and trade.

The people trade in agricultural products with the Champas of Tibet and with Skardu. Salt is largely exported to Skardu, and in a less degree to Kashmir, and is exchanged for grain, apricots, tobacco, madder, and ponies. The chief commerce is the Central Asian trade between Yarkand and India.

631 Administration, &c.

643

[691]

[704]

[439]

[648]

[624]

[651]

[872]

Ladākh is in the charge of a Wazīr Wazārat, who is responsible for Baltistān and the three *tahsils* of Ladākh, Kargil, and Skardu. His duties are light. There is little crime and scarcely any litigation. The chief cases are disputes regarding trees, or complaints that one villager has stolen the surface soil of another. No police force is maintained, but a small garrison of State troops is quartered in the fort at Leh, a building with mud walls. The Wazīr Wazārat and his establishment cost the State Rs. 9,166 per annum. One of the chief functions of the Wazīr is the supervision of the Central Asian trade which passes through Leh. For this purpose he is *ex-officio* Joint Commissioner, associated with a British officer appointed by the Indian Government. Each subdivision of Ladākh is in the charge of a *kārdār* who is a Bhot. His chief duties are to see that all reasonable assistance is rendered to the Central Asian traders and travellers. For this purpose the villages of each *kārdāri* are made responsible for furnishing baggage animals and supplies in turn, and according to the capacity of each village to the stages situated within the limits of the *kārdāri*. This is known as the *reis* system. Primary schools are maintained at Skardu and Leh.